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Mr. Lesley thought the valley could not have suffered from volcanic force, for it was tortuous like the suture of a skull, not straight like the profound lines of fault in the Appalachians of Pennsylvania, Virginia and Tennessee."

Mr. Foulke described the Deep River country as one of straight valleys walled in by vertical cliffs two or three hundred feet high, which he thought were evidently fractures of the crust.

Mr. Lesley described the Kanawha country to show that, if so, then the crust must be looked upon as having suffered a shivering rupture with open and profound cracks running irregularly or aborescently. But such fissures could not have been filled up, and their sides sloped off to form a country like western Virginia.

Dr. Woodhouse described the canons of the Pacific side, as sometimes sedimentary on one side, and volcanic or metamorphic on the other, and sometimes having lava streams in the middle.

February 23d.

Vice President LEA in the Chair.

Sixty-six members present.

The amendments to the By-Laws offered at the previous meeting for business, were read a second time and unanimously passed to a third reading.

The Auditors reported they had examined the Annual Report of the Treasurer, and compared it with the vouchers, and that they had found it correct; which report was adopted.

March 2nd.

Vice President LEA in the Chair.

Forty-eight members present.

Dr. Wilcocks read a paper entitled "Remarks on an Optical Illusion, by Alexander Wilcocks, M. D."

A paper was presented, entitled "Descriptions of new Organic Remains, collected in Nebraska Territory, by Dr. F. V. Hayden and others, under the direction of Lieut. G. K. Warren, U. S. Topographical Engineers, with some remarks on the Geology of the Black Hills, and portions of the surrounding country, by F. B. Meek and F. V. Hayden, M. D." which was referred to a committee.

Dr. Leidy read a letter from Mr. F. B. Meek and Dr. F. V. Hayden, dated Albany, Feb. 16th, 1858, indicating the probable existence of Permian Rocks in Kansas Territory, from which, at the request of the authors, the following extract is published.

"Some six months since, Major F. Hawn, of Weston, Missouri, to whom we are under many obligations for interesting information respecting the geology of Kansas Territory, sent on to one of us* a small collection of fossils from a locality near the junction of Solomon's and Smoky Hill forks of Kansas River. A portion of these fossils were at once recognized as being types common in the coal measures of the west. Along with these, however, there were several masses

(*Mr. Meek.)

of a yellowish magnesian limestone containing numerous casts of a very peculiar group of fossils. On examining these, it was soon observed that they are quite unlike any forms known to us in the carboniferous system, and very nearly allied to types considered characteristic of the Permian, of the old world. Major Hawn was at once apprised of this fact, and he has since informed us of several facts in relation to this formation, which rather go to confirm the view that it may prove to be of Permian age, rather than otherwise. In the first place, he informs us that the bed from which the fossils were obtained, hold a position above the well marked coal measures, and seems to have been deposited upon an uneven surface, as though the coal measures had been worn into hills and valleys previous to the deposition of the rock of which we speak." [Signed, MEEK and HAYDEN.]

Dr. Leidy directed the attention of the members to some fossils on the table, being part of the collection obtained by Dr. F. V. Hayden, in the valley of the Niobrara river, Nebraska. One of the specimens was the lower jaw of a new species of Mastodon. It belonged to an old individual, as the last molar tooth occupies its functional position and is considerably worn. The jaw indicates a smaller animal than the common Mastodon (*M. Ohioticus*.) The tooth resembles the corresponding one of *M. sivalensis*, or of *M. angustidens*, much more nearly than that of the common Mastodon. The crown has a much greater antero-posterior diameter in relation to its transverse diameter, than in the latter, and it has six transverse rows of tubercles, together with a feeble tarsus. The tubercles are crowded instead of being separated by wide angular valleys as in the common Mastodon. The tooth was compared with that from an unknown locality, characterized by Dr. Hays under the name of *M. Chapmani*; but this more nearly resembles the South American species *M. Humboldti*. In advance of the tooth, there are no traces of an alveolus for the preceding tooth, but a sharp ridge proceeds from the last molar to the anterior extremity of the jaw. Dr. Leidy observed he had never seen the jaw of the common Mastodon in the same condition, as the oldest individuals always presented the fifth alveolus filled up, and not completely obliterated. The species he named *Mastodon mirificus*.

Dr. Leidy next exhibited part of an upper molar tooth of an Elephant from the Niobrara; which he suspected to be a species distinct from those previously indicated, though it does not present sufficient characters to establish the opinion. It is the broadest tooth he had ever seen, being almost five inches, and it has fewer plates of enamel than in any variety of teeth of *Elephas Americanus* that had come under his inspection. The species he proposed to distinguish by the name *Elephas imperator*.

Dr. Hays called attention to the fact that the tooth of the new Mastodon had protruded more obliquely forward and upward than in the common species, indicating a nearer alliance to the Elephant.

Dr. Leidy thought Dr. Hays quite correct, and that the last molar in protruding forward and upward had gradually displaced two preceding teeth, whose position it now occupied. He then described the mode of development and succession of the teeth in the Elephant; and he showed, as observed by Dr. Hays in the new Mastodon, that we have a closer approximation to the same process, than in the common species.

On leave granted, Dr. Camac offered the following special resolution:

Resolved, That a committee of three be appointed to obtain and stock a marine aquarium to be placed in the Hall of the Academy, provided that the necessary amount be raised by subscription—which was adopted, and the committee appointed to consist of Drs. Camac and Rand, and Mr. J. D. Sergeant.

[March